EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. The drawings filed 09/19/2003 are accepted.

3. Authorization for this examiner's amendment was given in a telephone interview with Mr. Scott L. Appelbaum, Reg. No. 41587, on 09/19/2008.

4. Replace the abstract with the following:

The present invention provides a method of implementing a fault-tolerant mutual exclusion lock. The present invention records in a lock structure the IDs of all processes whose failure can lead to the permanent unavailability of the lock. When a process finds the lock unavailable and suspects a permanent failure, it queries the programming environment about the status of all or some of the processes that could have caused the lock's unavailability. If the programming environment determines that these processes have failed, the live process tries to usurp the lock. If it succeeds, it executes some recovery mechanism and frees the lock or proceeds to operate on the objects protected by the lock. The method guarantees recovery from process failures.

5. Claim 16, line 1, insert “in a computer” after “a mutual exclusive lock”.

6. The following is an examiner’s statement of reasons for allowance:

The prior arts of record, especially Kumar et al. (U.S. Patent No. 6301676) teaches a computer implemented method for implementing a mutual exclusive lock, wherein the mutual exclusive lock capable of preventing at least one acquiring process from operating on at least one shared data object, wherein the at least one acquiring process identified by at least acquiring process ID, the mutual exclusive lock including at least one variable capable of storing the at least one acquiring process identified by the at least one acquiring process ID stored in the at least one variable can operate on the at least one shared data object, the method performing the step of reading the at least one lock variable in the lock structure, checking whether the lock structure is busy such that the at least one lock variable contains an old ID of an old process that has previously acquired the lock structure, if the lock structure is busy, querying the program environment by the acquiring process to determine whether at least one old process is dead or alive using at least one old ID, if the old process is alive, the method starts over and the acquiring process reads the at least one lock variable in the lock structure, and if the old process is dead, the lock is reinitialized by resetting the flag, releasing the lock and performing recovery for the at least one shared data objects to a consistent state such that the acquiring process can access the at least one shared data objects. However, the prior arts of recorded either alone or in combination does not fairly suggest or teach the claimed

invention of a computer implemented method for implementing a mutual exclusive lock in details as recited in claim 16 especially when the lock structure is busy, and the process is dead, the acquiring process performs a Compare-and Swap on the at least one lock variable, the at least one old ID and the at least one process ID, if the Compare-and-Swap fails, the method starts over and the acquiring process reads the at least one lock variable in the lock structure, if the Compare-and-Swap is successfully performed, such that the at least one old ID is replaced by the at least one process ID, when the lock structure is not busy such that the at least one variable contains a clear value, the acquiring process attempts an atomic operation Compare-and-Swap on the at least one lock variable, the clear value and the at least one process ID, if the Compare-and-Swap is not successfully performed, the method starts over and the acquiring process reads the at least one lock variable in the lock structure, if the Compare-and-Swap is successfully performed, such that the at least one process ID is written to the at least one lock variable, operating one or more shared data objects originally protected by the lock structure, and resetting the acquiring process via the recovery mechanism so that it includes information of the acquiring process accessing the at least one lock variable and is ready for the net process to access the lock structure, wherein the recovery mechanism keeps a log of addresses pointing to the at least one shared data objects and values of the at least one shared data objects. Thus, claim 16 is allowed over the prior arts of record.

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer N. To whose telephone number is (571) 272-7212. The examiner can normally be reached on M-T 6AM- 3:30 PM, F 6AM- 2:30 PM.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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